

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) MethodA method for the production of molded bodies (1) out of thermoplastic material with or without fiber reinforcement in a one-step production process, characterised in thatcomprising the steps of:

utilizing a tool ~~is utilized~~ with a lower and an upper shell mold (10a, 10b), which form a mold cavity (12) with surfaces defined on both sides (11a, 11b),

whichwherein the shell molds are designed as thin-walled and metallic,

with a centering portion (15a, 15b) of both the shell molds,

with a displacement compensating, air-tight edge seal (16) between the two shell molds,

and with tempering means (13) for the controllable heating and cooling ~~on~~of both shell molds (10a, 10b),

whereininserting thermoplastic material (2), with or without reinforcing fibers (3), is inserted into a shell mold in a locally defined manner,

thereuponclosing the shell molds ~~are closed~~and subsequently evacuatedevacuating (p1) and in doing so pressedpressing together with a reduction

(ds1) of the distance between the shell molds,

~~then heating~~ the shell molds ~~are heated~~ up with the tempering means to a temperature above the melting point (T_m) of the thermoplastic material (2),

~~and holding~~ at a temperature (T_s) for the consolidation and flowing of the thermoplastic material under pressure (d_p) with a further pressing together of the shell molds (ds2) up to the contour filling flowing out,

~~and subsequently cooled~~ cooling down, under pressure, in a defined manner up to the complete solidification of the inserted material,

and ~~thereupon~~ opening the shell molds ~~are opened~~ and ~~removing~~ the formed molded body (1) ~~is removed~~.

2. (Currently Amended) ~~Method~~ The method according to claim 1, ~~characterised in that wherein~~ for the consolidation and flowing out, ~~in addition an~~ an additional external pressure (p_2) is applied to the shell molds.

3. (Currently Amended) ~~Method~~ The method according to claim 2, ~~characterised in that wherein~~ the external pressure (p_2) is applied in a pressure chamber (35) by means of compressed air.

4. (Currently Amended) ~~Method~~ The method according to claim 1, ~~characterised in~~

~~thatwherein~~ the shell molds₁ at the edge of the mold cavity₁ comprise a shaped retention zone (17) for the thermoplastic material.

5. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~, on the edge of the shell molds₁ vacuum channels (18) are conducted all around.
6. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~ with the shell molds geometrical shapings (42) such as ribs (43), holes (44), break-outs and differing wall thicknesses (45) are produced.
7. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~ the shell molds are designed as two parts and as separatable with a fixed edge part (10.1) and a mold part (10.2) forming the mold cavity (12).
8. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~ the shell molds are ~~composed~~comprised of differing zones (10.5, 10.6).
9. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~ the metallic shell molds (10a, 10b) consist of galvanic layers, ~~in~~

preference of nickel Ni and copper Cu.

10. (Currently Amended) ~~Method~~The method according to claim 1, characterised in that ~~electrical~~wherein the tempering means are electrical and are attached to the shell molds in the form of insulated electric heating wires (21).

11. (Currently Amended) ~~Method~~The method according to claim 1, characterised in thatwherein the as-tempering means comprises a liquid medium (23) that is utilized as cooling means or as heating means and as-cooling means, which circulates in channels (24), ~~which channels are attached to the shell molds (10a, 10b).~~

12. (Currently Amended) ~~Method~~The method according to claim 1, characterised in thatwherein the tempering means (13) are directly integrated into the shell molds (10).

13. (Currently Amended) ~~Method~~The method according to claim 1, characterised in thatwherein, on the shell molds, a locally differing tempering (Q1, Q2, 51) is produced.

14. (Currently Amended) ~~Method~~The method according to claim 1, characterised in

~~thatwherein~~ the tempering during the cooling down ~~step~~ does not take place in a linear manner, ~~but~~ with a slower transition through certain temperature zones (Tk).

15. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~ locally differing materials with differing characteristics and shapes are inserted into the shell molds in defined positions.

16. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~ additional surface layers (29) are inserted into the shell molds.

17. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~ on the surfaces or in certain zones soft, elastic materials (26) are inserted in a locally defined manner.

18. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~thatwherein~~ inserts (28) are inserted into the shell molds in a positioned manner, ~~which are~~~~the inserts becoming~~ integrated into the molded body or else are removed again following the production.

19. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~

~~that~~wherein hollow bodies or hollow spaces (46) are formed.

20. (Currently Amended) ~~Method~~The method according to claim 1, ~~characterised in~~
~~that~~wherein sealed gas cushions (41) with a defined gas content are inserted into the
shell molds.

21. (Currently Amended) ~~Installation~~An installation (30) for the production of molded
bodies out of thermoplastic material with or without fiber reinforcement in a one-step
production process, ~~characterised by~~comprising

a tool with a lower and an upper shell mold (10a, 10b), which form a mold
cavity (12) with defined surfaces on both sides (11a, 11b),

~~which~~the shell molds are designed as being thin-walled and metallic,

~~with a centering portion (15a, 15b) of the two shell molds~~having a
centering portion (15a, 15b),

~~with~~a displacement compensating, air-tight edge seal (16) between the two
shell molds,

~~with~~a tempering means (13) for the controllable heating and cooling ~~on~~of both
mold shells (10a, 10b), and

~~and with~~a vacuum device (31) and a control system (34),

wherein thermoplastic material (2) with or without reinforcing fibers (3) is able to be

inserted into a mold shell in a locally defined manner,

wherein the shell molds are closed~~closable, allowing~~subsequently~~subsequent~~
evacuated with~~the~~vacuation using the vacuum device (p1) and in doing so
pressed~~pressing~~ together the shell molds with a reduction (ds1) of the distance
between the shell molds,

thereupon~~wherein~~ the shell molds are heated~~up~~heatable, -with the tempering
means, to a temperature above the melting point (Tm) of the thermoplastic material
(2)

and maintained~~wherein~~ the tempering means are able to maintain the shell molds at
a temperature (Ts) for the consolidation and flowing out of the thermoplastic material
under pressure (dp) with a further pressing together of the shell molds (ds2) up to
the contour-filling flowing out,

and subsequently cooled~~wherein~~ the shell molds are coolable down under pressure
in a defined manner with the tempering means, up to~~causing~~ the complete
solidification of the inserted material.

22. (Currently Amended) Installation~~The installation~~ according to claim 21,
characterised byfurther comprising a compressed air device (32), ~~by means of which~~
an~~for~~applying additional external pressure (p2) is applied to the shell molds with
compressed air.

23. (Currently Amended) ~~Installation~~The installation according to claim 21,
~~characterised by~~further comprising two arched half shells (36a, 36b) made out of
endless fiber-reinforced plastic material with a locking device (37), which form a
pressure chamber (35).

24. (Currently Amended) ~~Installation~~The installation according to claim 21,
~~characterised by~~further comprising an assigned confectioning station (38) for the
cutting to size and putting together ~~of~~ a pack of material (27), a handling robot (39)
for the positioned insertion of material and a process control system (34) for the
controlling of the tempering, pressure and materials' movements.

25. (Currently Amended) ~~Molded~~A molded body made out of thermoplastic
material, manufactured according to the method of claim 1, ~~characterised in~~
~~that~~wherein shaped pore-free visible surfaces (9a, 9b) defined on both sides are
produced.

26. (Currently Amended) ~~Molded~~The molded body according to claim 25,
~~characterised by~~wherein the molded body has a multi-layered structure (4) or ~~by~~
locally differing material compositions.